

ROD INQUIRY
Submission No. 20.....

Australian Geoscience Council Inc.

The Council of Earth Science Societies in Australia



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30 August 2002

The Committee Secretary
Standing Committee on Science and Innovation
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Inquiry into Business Commitment to Research and Development in Australia

Attached with this letter is a submission from the Australian Geoscience Council on the Inquiry into Business Commitment to Research and Development in Australia.

The Australian Geoscience Council comprises nine societies and associations, has a membership of over 7000 and represents most of the professional geoscientists in Australia. A key aim of the AGC is to promote the geosciences, in the best interests of both our constituent organisations and the Australian nation as a whole.

We appreciate the opportunity to make this submission, because we strongly believe that the challenge of boosting industrial R&D in Australia is one of the most important issues facing we face in this increasingly technological age.

Please do not hesitate to contact me if you require further information or clarification.

Yours sincerely

A handwritten signature in black ink that reads 'David Denham'.

David Denham
President



**Submission to House of Representatives Standing Committee on
Science and Innovation to the Inquiry into Business Commitment
to Research and Development in Australia**

Comments on key questions

What would be the economic benefit for Australia from a greater private sector investment in R&D?

- *R & D investment in science and technology is essential to maintain and improve the international competitiveness of our industries.*
- *We need efficient competitive businesses to generate wealth through strong exports and the creation of new jobs.*
- *A culture of innovation and R&D creates a community of highly skilled workers that are able to contribute to the nation through their skills, knowledge and experience.*
- *We need a strong R & D culture in the private sector to maximise the benefits from our strong performance in publicly funded basic research.*
- *We need a highly skilled private sector so that we can create a nation that is wealthy, sustainable, rich in culture and healthy.*

We identify four key themes in our vision for Australia over the next 10 – 20 years. These are:

Wealth: We must have wealth to be able to do anything, without wealth we are doomed.
Sustainability: We must have a sustainable environment so that we do not disadvantage subsequent generations.
Health: Good health and long life expectancy should be a national aspiration.
Wisdom: We need an excellent educational, research and cultural environment to provide the necessary knowledge and wisdom in the community for Australia to fulfil itself as a nation.

Furthermore we have identified several important research areas that will require R&D investment if we are to achieve our goals. These are:

Improve exploration techniques for discovering new oil, gas and mineral resources, so that more resources can be discovered. Improve techniques and incentives to increase the life and total hydrocarbon recovery from reservoirs. New innovative techniques will provide export services that are globally competitive.

Improve our understanding of the structure and composition of the Australian continent to increase the chances of finding new mineral and petroleum resources.

Improve techniques to extract and process minerals and oil and gas more efficiently, so that these resources are developed responsibly to produce value-added products that are globally competitive.

***Develop and implement national plan to arrest the spread of dryland salinity
Undertake national program to understand assess Australia's surface and underground water supplies, with a view to developing a sustainable resource plan.***

Conserve energy resources by developing more efficient methods of transport and better ways to heat and cool buildings.

Develop and implement alternative and more sustainable energy sources, eg, hydrogen, solar, tidal and wind.

Develop new techniques to separate and capture emissions, particularly CO₂

Investigate new techniques to sequester CO₂ and other greenhouse gases.

To achieve progress in these areas we believe there needs to be an increased and sustained investment in science and technology. This will involve the small to medium sized businesses because they are crucial for creating jobs and wealth in the community and tackling the above issues. These enterprises need to be nurtured because without R&D investment, they will become uncompetitive and be left behind with old technologies and outmoded services.

'In Australia 64% of business enterprise R&D is performed in firms of less than 500 employees, with only 24% performed in firms with greater than 1,000 employees. Thus, for the majority of Australian firms, longer-term research is very difficult to carry out within the firm unless it expends considerably more than the industry average on R&D. In the United States however 54% of industrial R&D is carried out in firms with greater than 10 000 employees, with only 18% in firms of less than 500 employees. Thus, in the USA there is a large number of firms with the scale that enables them to carry out longer-term research in-house' (CSIRO submission to Batterham Review).

Globalisation has resulted in a major decline in the R&D carried out in Australia by the multi-nationals operating here. We therefore continue to rely on the SMEs to undertake R&D and consequently it is crucial that their R&D investment is maximised.

In the resource and environmental sectors where the economic impacts are huge, small gains in productivity as a result of innovation will result in very significant flow on effects in these industries.

For example by improving exploration techniques for discovering new oil, gas and mineral resources; developing new sustainable supplies of energy; and arresting the spread of land degradation and declining water resources, there will be huge benefits to the nation.

There does not need to be huge breakthroughs in these areas. With the resource industries alone generating over \$55 billion/year in merchandise exports, and the agriculture and processed food industries combining to generate exports of similar value, small improvements in these sectors will leverage major gains in terms of wealth and sustainability.

What are the impediments to business investment in R&D?

- *Poor investment levels by large multi-national companies operating in Australia.*
- *Inadequate tax stimulation for R & D investment.*
- *Lack of long-term view in the marketplace, where the culture is one of short-term profit and gains in the share price.*
- *Low levels of venture capital available for new high-tech companies.*
- *Low level of business awareness in the research community. The nexus between science and business is not adequately developed.*
- *Takeover laws in Australia make easy targets of small cash strapped start-up companies.*

One of the main reasons why the business investment in Australia is much lower than in most of our OECD partners is that there is a very low level of investment by the large multi-national companies that operate here. According to ABS figures, in 2000-01 our BERD is at 0.7% of GDP, whereas the OECD average is more than 2.0%. In terms of business R&D intensity Australia ranked 20th in the OECD ST & Industry Scoreboard.

In the resource industries most of the multi-national petroleum and mineral explorers have dramatically reduced their R&D efforts in Australia. The petroleum companies have a particularly poor record in this situation.

The present 125% tax deductibility for R&D under BAA (with 175% for new R&D only in the year in which it is introduced) compares unfavourably with the earlier rates of 150%, particularly as the corporate tax rate been reduced from 50% to the current rate of 30% and when overseas rates of deductibility, in some cases reach 200%.

Furthermore, for start-up companies that do not have a positive cash flow, an R&D tax deduction does not help.

The time frame for R&D returns is usually too short in the context of the half-lives of CEOs. This is particularly true of the longer-term strategic research, where the return on investment could take several years to realise. In Australia public companies are required to report to shareholders and to the market quarterly, there is therefore significant pressure on firms, to perform in the short term by cutting costs and increasing revenue. Businesses are therefore reluctant to invest heavily in R&D without additional incentives.

Australia's current standing on the availability of venture capital is well below the OECD average. In the period 1995-98 it was at about 0.06% of GDP compared to over 0.15% in the US the Netherlands and Canada. This is a major problem in developing new high-tech companies.

Many scientists are not comfortable with the commercialisation of their research results because they have not, for the most part, been exposed to business administration and financial management during their degree courses. They would rather tackle the intellectual problem solving challenges, for which they are comfortable, and for which they have been trained. This cultural "divide" impedes investment in business R&D.

At present it is relatively easy to takeover start-up companies early in their development, particularly when cash flow could be a problem. This results in the loss of promising high technology companies to overseas interests and often shifts the R&D effort offshore.

What steps need to be taken to better demonstrate to business the benefits of higher private sector investment in R&D?

- *Encourage multi-national companies to undertake R&D in Australia.*
- *Re-introduce the 150% tax benefit for R&D.*
- *Promote a ten-year outlook in priority setting for investment.*
- *Recognise R&D achievements – equate successful scientists with successful sportspersons.*
- *Patent applications should attract the 150% tax rebate.*
- *Remove HECS fees from science teaching courses to encourage quality teachers to enter the teaching profession.*

The Commonwealth Government should encourage multi-national companies to undertake R&D in Australia. They have the leverage to adopt carrot and stick approaches to overseas companies doing business in Australia and these should be used.

Government incentives should be sufficiently simple and attractive to encourage R&D investment, and should be consistent to enable long-term planning. We favour a return to the simple 150% tax benefit for R&D that was in place in the 1980s and early 1990s. We believe that appropriate steps can be taken to avoid the alleged rotting that was taking place earlier.

The change from short-term to long-term culture for investment and planning is going to be very difficult to tackle. When elections are held every three years and when shareholders demand short-term profits this is going to be a real challenge. We believe that a first step should be to develop a vision for Australia, so that we have a national goal or a series of national goals. This has already been started with the priority-setting program across the whole of government in terms of focussing our research efforts. We recommend that this process should be started immediately.

We need to attract the best people into science and technology. This requires a revitalisation of teaching at all levels of education. Primary school teachers need basic knowledge to explain the world to children. High school teachers need support (such as relief from HECS) to undertake science courses so they are confident in communicating to their charges. Our universities need well-paid lecturers and modern infrastructure to stimulate participation in science and technology, so that world-class researchers are available to undertake private sector funded R&D. There also need to be courses at tertiary institutions on subjects such as, business administration and financial management for scientists and technologists, so that the nexus between research and commercial development is strengthened.

Significant progress has been made in recent years to enhance the achievements of scientists. This trend must continue so that students can see that there are real and valuable rewards available in pursuing careers in science and technology.

The patenting of IP is very important and also very costly because of the legal procedures that have to be followed. We recommend that the same tax incentives should apply to patent applications as to R&D investments.

30 August 2002